REMARKS/ARGUMENTS

Claims 1-23 are pending in the application. Claims 1, 12, 16, 17, 20, and 23 are amended herein. The Applicant hereby requests further examination and reconsideration of the application in view of these remarks.

Miscellaneous Amendments

Claim 23 has been amended for improved antecedent basis for "the new service." This amendment was not made to overcome any prior-art rejection.

Prior-Art Rejections

On pages 3-7, the Examiner rejected claims 1-23 under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. No. 6,982,951 B2 to Doverspike et al. ("Doverspike"). For the following reasons, the Applicant submits that all of the pending claims are allowable over Doverspike.

Claims 1 and 17

In rejecting previously pending claim 1, the Examiner argued that Doverspike discloses all of the claimed features of claim 1, including the step of representing information in a network data structure, "wherein the network data structure comprises, for each link in the network and each node or other link in the network, a representation of a minimum amount of protection bandwidth required to be reserved on said each link to restore service upon failure of said node or other link." The Examiner cited Figure 3 and column 5, lines 11-25 and 39-57, of Doverspike as specifically teaching this step.

Claims 1 and 17 have been amended for clearer antecedent basis. Amended claims 1 and 17 recite a network data structure that "comprises, for each link in the network and each node or other link in the network, a representation of a minimum amount of protection bandwidth required to be reserved on said each link to restore service upon failure of said each node or other link."

The Applicant submits that neither the cited teachings nor any teachings of Doverspike discloses the network data structure claimed in amended claim 1. Doverspike teaches a method of selecting a restoration path in a mesh telecommunication network (*see, e.g.*, Doverspike, Abstract). Fig. 3 of Doverspike shows a fiber-span network and a table identifying (i) the nine spans of the shown fiber-span network and their corresponding (ii) nine "from" endpoints, (iii)

nine "to" endpoints, and (iv) nine "master" endpoints. It should be noted that Doverspike uses the term "fiber spans" to refer to "[c]ollections of optical fibers that are co-located in the same cable, conduit, or substructure between two consecutive points of access—such as a manhole, central office, or amplifier site," whereas an "optical link" refers to "a collection of channels that route over the same fiber spans between a pair of [optical cross-connects]" (Doverspike, column 3, lines 27-34). The cited sections of column 5 of Doverspike discuss storing and calculating restoration paths, including selecting a minimum-weight path among all suitable paths.

The Examiner seemed to suggest that scattered mentions of elements remotely reminiscent of the claim's recited elements are sufficient to show anticipation. That is <u>not</u> so. The Court of Appeals for the Federal Circuit recently reiterated "that unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102." *See, Net MoneyIN, Inc. v. VeriSign, Inc.*, No. 2007-1565, pp. 17-18, (Fed. Cir., Oct. 20, 2008).

The claimed network data structure represents "a minimum amount of protection bandwidth required to be reserved on said each link to restore service upon failure of said each node or other link." Thus, if, for example, a network comprises links 1-10 and nodes A-E, then, for link 1, the network data structure would represent the minimum amount of protection bandwidth required to be reserved on link 1 to restore service upon failure of each of links 2-10 and nodes A-E. Similarly, for link 2, the network data structure would represent the minimum amount of protection bandwidth to be reserved on link 2 to restore service upon failure of each of links 1 and 3-10 and nodes A-E. The network data structure would also represent the corresponding information for links 3-10. The network data structure for this exemplary network of ten links and five nodes would have 10*(9+5), or 140 minimum-bandwidth data points represented (it should be noted that the particular form of this representation is not limited). Neither the cited teachings nor any other teachings of Doverspike disclose any data structure of this sort. Thus, it cannot be said that Doverspike teaches this requisite feature of claim 1.

Additionally, the Examiner asserted that Doverspike's mention of a minimum-weight path in column 5 indicates a teaching of the previously recited "minimum amount of protection bandwidth required to be reserved on said each link to restore service upon failure of said node or other link." However, that is <u>not</u> so. Doverspike's minimum-weight path is the "path among

all suitable paths that minimizes the cost metric" (Doverspike, column 5, lines 46-47). Other than the shared word "minimum," the Examiner provided no rationale for how Doverspike's path may be related to the claimed amount of protection bandwidth required to be reserved on said each link to restore service upon failure of said each node or other link. Thus, it cannot be said that Doverspike teaches this requisite feature of claim 1.

Furthermore, Doverspike does not appear to anywhere disclose node failures. Doverspike appears to contemplate only fiber-span failures. *See, e.g.*, Doverspike, column 4, lines 48-67. The claimed network data structure, however, includes a representation of a minimum amount of bandwidth required to be reserved on a link to restore service upon failures of nodes of the network. Doverspike cannot teach such a data structure if Doverspike does not even contemplate node failures. Thus, it cannot be said that Doverspike teaches this requisite feature of claim 1.

Claim 1 also recites the step of "receiving a request for a new service in the network, wherein the new service is represented by a service data structure comprising an identification of each link and transit node in a primary path for the new service." The Examiner cited column 5, lines 33-40 and 60-64, and Fig. 3 of Doverspike as specifically teaching this feature. The Examiner specifically cited the connection request of Doverspike as allegedly corresponding to the service data structure. However, the connection request disclosed by Doverspike is "represented in the form <source, destination, restoration-type, size>" (column 5, lines 34-35), which does not identify any links, let alone each link and transit node in a primary path, as required by claim 1. In fact, the Doverspike connection request cannot identify each link and transit node in the primary path because the primary path (which Doverspike calls the service path) is selected, by the destination node, after receiving the connection request; *i.e.*, the links and transit nodes are not yet known when the connection request is received. *See, e.g.*, column 5, lines 60-64. Thus, it cannot be said that Doverspike teaches this requisite feature of claim 1.

In view of the foregoing, the Applicant submits that claim 1 is allowable over Doverspike. For similar reasons, the Applicant submits that claim 17 is also allowable over Doverspike. Since claims 2-16 and 21-23 depend variously from claim 1, and claims 18-20 depend variously from claim 17, it is further submitted that those claims are also allowable over Doverspike.

Claim 7

In rejecting claim 7, the Examiner argued that Doverspike teaches a network data structure that "is an array of vectors, wherein . . . each vector in the array corresponds to a different link in the network" and "each vector in the array has a plurality of entries corresponding to the nodes and links in the network." The Examiner cited column 8, lines 1-15, of Doverspike as specifically teaching this feature. However, the Applicant submits that the cited section does not teach the requisite network data structure.

Rather, the cited section of Doverspike discusses the array M_k, which is described as "the number of channels needed on fiber link k over all possible failures of the previously selected service path for V, i.e., M_k=max{$failneed_{sk}$: fiber span s is on the service path for connection request V}" (Doverspike, column 6, lines 39-42). M_k is a one-dimensional array, while the claimed array is multi-dimensional as it comprises a plurality of vectors, each vector having a plurality of entries. In addition, the entries of M_k correspond to fiber spans on a selected service path, and not the nodes and links of the network. Thus, it cannot be said that M_k corresponds to the claimed array. Furthermore, no array disclosed in Doverspike is an array of vectors where each vector "has a plurality of entries corresponding to the nodes and links in the network," as required by claim 7. Thus, it cannot be said that Doverspike teaches this requisite element of claim 7.

According to the Examiner, Doverspike also discloses "a first vector corresponding to a first link," wherein "each entry in the first vector corresponding to a node or other link identifies the minimum amount of protection bandwidth required to be reserved on the first link to restore service upon failure of the node or other link." The Examiner cited column 6, lines 31-39, and column 8, lines 30-40, of Doverspike as specifically teaching this feature. However, the cited teachings do not disclose the requisite first vector.

Instead, the cited teachings of Doverspike discuss a definition of one-dimensional array $maxfailneed_k$ and updating of a $failneed_{sk}$ array. The $failneed_{sk}$ array contains information about the restoration channels needed on optical links for failures of fiber spans. Unlike the claimed first vector, the $failneed_{sk}$ array does not correlate a first link to other links and nodes. The cited teachings have no disclosure of a first vector corresponding to a first link, wherein each entry in the vector (i) corresponds to a node or other link in the network and (ii) identifies the minimum amount of protection bandwidth required to be reserved on the first link to restore service upon

failure of the entry-corresponding node or other link. In fact, no part of Doverspike teaches such a vector. Thus, it cannot be said that Doverspike teaches this requisite element of claim 7.

According to the Examiner, Doverspike also discloses a service data structure that "is a primary path vector having a plurality of entries corresponding to the nodes and links in the network, wherein . . . each entry of the primary path vector identifies whether the corresponding node or link is part of the primary path for the new service." The Examiner cited column 8, lines 30-40, of Doverspike as specifically teaching this feature. However, the Applicant submits that the cited section does not teach the requisite primary path vector.

Instead, as noted above, the cited section discusses updating of a failneed_{sk} array. Neither this section, nor any section of Doverspike, teaches the claimed primary path vector, which has a plurality of entries corresponding to the nodes and links in the network, wherein each entry identifies whether the corresponding node or link is part of the primary path for the new service. Thus, it cannot be said that Doverspike teaches this requisite element of claim 7.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 7 over Doverspike. For similar reasons, it is further submitted that this provides further grounds for the allowability of claims 21-24 over Doverspike. Since claims 8-10 depend variously from claim 7, it is further submitted that this also provides further grounds for the allowability of those claims over Doverspike.

Claim 12

In rejecting previously pending claim 12, the Examiner argued that Doverspike teaches "wherein an incremental version of the network data structure is used to reduce the amount of data that is transmitted in the network to disseminate the information." The Examiner cited column 27, lines 40-46, of Doverspike as specifically teaching this feature. Since Doverspike does not have a column 27, the Applicant presumes the Examiner meant column 7, lines 40-46. If that is not what the Examiner meant, the Applicant respectfully requests a clarification.

First, the Applicant respectfully notes that the Examiner misquoted claim 12, which recites "a compact version" and "the amount of data that needs to be transmitted . . . to disseminate the information about each link."

Claim 12 has been amended to clarify that "a compact version of the network data structure is used for transmitting sharing information in order to reduce the amount of data that

needs to be transmitted in the network." This amendment is supported by the originally filed specification at page 18, lines 13-29.

The Applicant submits that the cited section of Doverspike does not teach the requisite elements of claim 12. The cited section of Doverspike teaches storing one-dimensional arrays at cross connects "to avoid flooding and minimize the storage requirement for this information." Doverspike does not teach using a compact version of the claimed network data structure for transmitting sharing information, as recited in claim 12. Thus, it cannot be said that Doverspike teaches this requisite element of claim 12.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 12 over Doverspike. Since claims 13-15 depend from claim 12, it is further submitted that this also provides further grounds for the allowability of those claims over Doverspike.

Claim 20

In rejecting previously pending claim 20, the Examiner argued that Doverspike teaches "wherein a compact version of the network data structure is used to reduce the amount of data that needs to be transmitted in the network to disseminate the information about each link." The Examiner cited column 4, lines 63-67, of Doverspike as specifically teaching this feature.

Claim 20 has been amended to clarify that "a compact version of the network data structure is used for transmitting sharing information in order to reduce the amount of data that needs to be transmitted in the network." This amendment is supported by the originally filed specification at page 18, lines 13-29.

The Applicant submits that the cited section of Doverspike does not teach the requisite elements of claim 20. The cited section of Doverspike teaches that "[t]he total reserved channels, however, should be as small as possible," and says nothing about data structures. Neither the cited section, nor any other section of Doverspike teaches using a compact version of the claimed network data structure for transmitting sharing information, as recited in claim 20. Thus, it cannot be said that Doverspike teaches this requisite element of claim 20.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 20 over Doverspike.

Claim 21

In rejecting claim 21, the Examiner argued that Doverspike teaches all the features of claim 21, including that "each vector in the network data structure array has a plurality of entries

corresponding to <u>all the nodes and links</u> in the network" (emphasis added). The Examiner cited column 7, lines 30-33, of Doverspike as specifically teaching this feature. The Applicant submits, however, that Doverspike does <u>not</u> teach this requisite feature of claim 21.

The cited section of Doverspike states, "All of the information needed for the computation of the service and restoration paths could be maintained at every [optical cross-connect] node." There is <u>no</u> teaching either in the cited section or in any other section of Doverspike of an array whose every vector has a plurality of entries corresponding to <u>all</u> the <u>nodes and links</u> in the network, as recited in claim 21. Thus, it cannot be said that Doverspike teaches this requisite element of claim 21.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 21 over Doverspike.

<u>Claim 22</u>

In rejecting claim 22, the Examiner argued that Doverspike teaches all the features of claim 22, including that "the service data structure is a primary path vector having a plurality of entries corresponding to <u>all the nodes and links</u> in the network, wherein each entry of the primary path vector identifies whether the corresponding node or link <u>is or is not</u> part of the primary path for the new service" (emphasis added). The Examiner cited Fig. 3 of Doverspike as specifically teaching this feature.

The cited figure, as noted previously, shows a fiber-span network and a table identifying (i) the nine spans of the shown fiber-span network and their corresponding (ii) nine "from" endpoints, (iii) nine "to" endpoints, and (iv) nine "master" endpoints. The table of Fig. 3 is a two-dimensional array. No row or column of the table, *i.e.*, no vector, represents a primary path vector since, as noted, each row represents a fiber span. Furthermore, the table presents <u>no</u> vector whose entries correspond to <u>all the nodes and links</u> in the network, wherein each entry identifies whether the corresponding node or link <u>is or is not</u> part of the primary path, as recited in claim 22. Thus, it cannot be said that Doverspike teaches this requisite element of claim 22.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 22 over Doverspike.

<u>Claim 23</u>

In rejecting previously pending claim 23, the Examiner argued that Doverspike teaches all the features of claim 23, including that "at least one entry of the primary path vector identifies

that the corresponding node or link <u>is not</u> part of the primary path for the service" (emphasis added). The Examiner cited Fig. 3 of Doverspike as specifically teaching this feature.

As previously noted, no row or column of the table represents a primary path vector since each row of the table represents a fiber span. Furthermore, the table presents <u>no</u> vector having at least one entry identifying that the corresponding node or link <u>is not</u> part of the primary path for the new service, as recited in amended claim 23. Thus, it cannot be said that Doverspike teaches this requisite element of claim 23.

Therefore, the Applicant submits that this provides further grounds for the allowability of claim 23 over Doverspike.

In view of the above amendments and remarks, the Applicant believes that the now-pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

<u>Fees</u>

During the pendency of this application, the Commissioner for Patents is hereby authorized to charge payment of any filing fees for presentation of extra claims under 37 CFR 1.16 and any patent application processing fees under 37 CFR 1.17 or credit any overpayment to Mendelsohn & Associates, P.C. Deposit Account No. 50-0782.

The Commissioner for Patents is hereby authorized to treat any concurrent or future reply, requiring a petition for extension of time under 37 CFR § 1.136 for its timely submission, as incorporating a petition for extension of time for the appropriate length of time if not submitted with the reply.

Respectfully submitted,

Date: 14-NOV-2008

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